

other matters, entries relating to the Royal Society and science, the former chapter dealing with the period from 1844 to 1861, when Mr. White became Assistant Secretary; the latter with that from 1861 to 1884, the year before he ceased to hold office. The forty years which these two chapters cover were years in which science made remarkable strides, and years also during which important events took place within the Society. Mr. Walter White was literary rather than scientific in his leanings; still the records of the impressions made by the successive exposition of new scientific ideas upon one who listened to them in turn, near at hand, during so long a series of meetings of the Society could not fail to be interesting. We are told in the preface that the present volume is not the whole diary, but only selections from it. It is to be regretted that what has been published contains so little dealing with the weighty matters of science brought before the Society during the forty years, or with the effects produced by new ideas on those who were the first to listen to them. It is still more to be regretted that the selection has been so largely confined to matters which cannot justly be called by any other name than tittle-tattle and scandal. From his position Mr. Walter White was to a large extent a confidential servant of the Society. The Fellows were in the habit of talking to him freely, and often expressed themselves concerning scientific things and scientific persons in a familiar and unguarded manner. There could be no harm in Mr. Walter White writing down for his own delectation sayings which pleased him on account of their picturesque force, such as Mr. A.'s account of Dr. B.'s opinion about Prof. C.'s works and ways; but it is to be exceedingly regretted that Mr. William White should have thought it desirable to give publicity to gossiping statements, redeemed neither by wit nor by accuracy, the appearance of which can do little more than give pain to the living, or to the friends of the dead whom they concern. We hasten to add, lest the above remarks should excite curiosity, that the gossip in question will yield very little amusement where it does not give offence. We may add that the volume does not do justice to Mr. Walter White himself any more than it does to the leading men of science and the Royal Society; their conversation with him did not consist chiefly in finding fault with each other, nor was his chief delight in listening to them, and taking notes of their angry or idle words.

OUR BOOK SHELF.

Agricultural Chemistry. By R. H. Adie, M.A., B.Sc., and T. B. Wood, M.A. 2 vols. Pp. ix + 280, and vii + 229. (London: Kegan Paul and Co., Ltd., 1897.)

IN the preface this is described as an elementary textbook of chemistry, designed for students beginning the study of agricultural science, and adopting as its method the teaching of the subject by experiment. The book demands some attention, as it is written by the teachers of agriculture in the University of Cambridge.

We are often told that the only right way of teaching chemistry is by leading the student to be himself the discoverer of chemical facts and laws by a series of experiments, observations, and inferences. This method is certainly excellent as an introduction to the science,

but it becomes too cumbersome as the scholar proceeds, and the teacher soon finds himself making important statements of which no demonstration is forthcoming. Nor are all parts of the science best learnt by the exhibition of experiments. It is, indeed, easier to learn grammar as grammar, than to discover grammar for ourselves by the analysis of a language.

The first of these small volumes is intended as an introduction to general chemistry; the second deals with the subjects of soil and manures, with a briefer reference to the constituents of plants, and the analysis of foods.

It is difficult to tell in what manner the book is intended to be used. The details of the experiments are often so imperfectly described, that it would be impossible for a student to perform them without further directions. The preface states that the book is especially intended as an aid to teachers; but if the teacher is to follow the course marked out, he must clearly have a great deal of other information to fall back upon. One cannot, however, resist the conclusion that a great many of the experiments mentioned are not meant to be performed, but merely to be talked about.

We need hardly say that a good deal of correct teaching is given, but the errors and deficiencies are not a few. R. W.

Notions générales sur l'Écorce terrestre. Par M. le Prof. A. De Lapparent. 8vo. Pp. 156. (Paris: Masson et Cie., 1897.)

GEOLOGY can be made attractive enough by a good writer who divests the subject of those details which concern only the specialist. To learn the aims of the science and its main results are all that the general reader and the elementary student require; and it is well when, as in the present little work, a distinguished master is not only willing but able to produce such a sketch agreeably written as well as instructive. The subject is introduced in the course of six lessons, and the author, in the first place, deals with the early history of the globe, with seas and continents, and the external features of the earth in general. He passes on to consider various questions of physical geography, and the erosion of the land by rain, rivers, and sea. His remarks on the cutting away of river-courses so as in time to produce a *profil d'équilibre* are illustrated with reference to the Seine, which has excavated its channel almost to the lowest possible level throughout its main course. The method of accumulation of various sediments, and volcanic phenomena are next discussed. Upheavals and depressions and the sequence of rocks form the subjects of another lesson. Some account of the Paris Basin is given, and in conclusion there is a brief description of the principal geological formations. The work is illustrated by thirty-three figures of fossils, sections, and photographic reproductions. Among the fossils only the principal forms of life are indicated, such as a Sea-urchin from the Chalk, a Devonian Spirifer, Jurassic Ammonites, and a Fossil Bird. The student's mind is therefore not burdened with many names, but a perusal of the work will give him a clear general grasp of the principles and elements of geology. H. B. W.

The Dawn of Civilization: Egypt and Chaldaea. (Third edition.) By G. Maspero. Pp. xiv + 800. (London: S.P.C.K., 1897.)

THE third edition of "The Dawn of Civilization," the English translation of Prof. Maspero's "Les Origines," has just been issued. The three coloured photographic plates which were inserted in the second edition are here retained, while but few changes have been made in the text of the second edition of the work. The most considerable addition appears to be in the chapter dealing with the first Theban empire. Here the author

gives a brief sketch of the conclusions that may be drawn from a study of the remains recently found by Prof. Petrie between Ballas and Naqâda. Towards the end of the sixth dynasty the Libyans, yielding to a migratory impulse, overran the western frontier and established themselves in Egypt, leaving a permanent record of their presence in the burying places and remains of villages which extend the whole length of the mountain chain from Siût to Gebelén. Prof. Maspero does not go so far as Prof. Petrie, who would regard the whole of the south of Egypt as having been wrested from the native kings by this "new race"; he does, however, conclude that these Libyan settlers were predominant throughout a considerable area on the left bank of the river, and that their influence was felt for more than a century. The pagination remains the same as that of the two earlier editions of the book.

The Local Distribution of Electric Power in Workshops, &c. By Ernest Kilburn Scott, A.I.E.E. Pp. 137 + viii. (London: Biggs and Co.)

THE advantages of electric transmission of power in factories and workshops are not so well known as they might be, or the electric driving of machinery would be more extensively adopted than it is. Wherever electric motors have been made to do duty in machine shops, complete success has been attained, but it is only in late years that engineers and proprietors of factories have learned to make use of electric driving to any great extent. Lately, however, this branch of electrical engineering has been coming to the front, and it promises to develop into the most important branch of electrical work, electric lighting not excepted.

The information brought together by Mr. Scott will show manufacturers what has been done, and what electric motors are capable of doing. The advantages of electric driving, both economically and commercially, are clearly pointed out, and detailed particulars of power required by various machines are given. The advantages and disadvantages of alternating currents from the point of view of power distribution in factories are discussed, and there are descriptions of the various points of a power installation, with examples of the most recent practice. The book is thus one which should be in the hands of all who are concerned with the applications of electricity to the machines and tools of workshops and factories.

Memory and its Cultivation. By F. W. Edridge-Green, M.D., F.R.C.S. (International Scientific Series.) Pp. 307. (London: Kegan Paul and Co., Ltd., 1897.)

DR. EDRIDGE-GREEN considers that the human mind is divisible into "ultimate faculties," a list of which he gives. Of these "ultimate faculties" some thirty-seven are assigned to this position with certainty. Dr. Green has no doubt whatever about their fitness to be considered "ultimate faculties," although amongst them are such qualities as Causality, Alimentiveness, and Inhabitiveness. Others there are, such as Vitativeness and Human Nature, whose position as ultimate faculties of the human mind is still *sub judice*. Dr. Green might, we think, have postponed the publication of this book until he had made up his mind about them. Part of the book is devoted to the description of a system of cultivating the memory; but there is the best possible evidence that either Dr. Green does not himself utilise this system, or the system is worthless. He would certainly never have published a work on psychology without acquainting himself with the present state of knowledge upon the subject. Yet he has forgotten the whole of his psychological studies as completely as if they had never existed. If his system were one for cultivating the art of forgetfulness, and were a perfect system, the result could not be more complete.

Illusions and Hallucinations. By Edmund Parish. Pp. xiv + 390. (London: Walter Scott, Ltd., 1897.)

THIS is a very thorough account of the subject, in fact it is, perhaps, for the series to which the book belongs, almost too thorough, and the general reader may find some difficulty in getting a clear account of the author's views out of the mass of detail. The conditions of fallacious perception are fully considered, and the general phenomena are referred to disturbed association. The author gives new definitions of illusion and hallucination, the former being supposed to depend on the suppression of certain processes which normally intervene between the immediate sensory change and the perception process, while hallucination is referred to forced association. These definitions have the advantage that they refer both phenomena to a common cause, *i.e.* to dissociation of centres normally acting together; but they are open to the objection that they are based on purely theoretical and uncertain views, and it would probably be better to retain the old definition depending on the existence or non-existence of an external stimulus while recognising that there is no hard and fast line between the two conditions. There are two interesting chapters on the results of the international census of waking hallucinations. The author brings forward much evidence that the real nature of the "waking state" in most cases was one of abnormal dissociation. He criticises adversely the evidence for telepathy derived from the census, which was regarded as valid by the authors of the English Report. He brings forward from the Report itself evidence against this conclusion, and in regard to the supposed positive evidence, he lays great stress on the importance of similarity of association of ideas in the two cases. Among many other interesting points, only one can be mentioned here, *viz.* the criticism of the view that the negative hallucinations of hypnotism depend on suggested inattention. The author points out that an object may be made by suggestion to appear smaller and smaller, till it finally disappears. In this case, according to the theory, a phenomenon due to concentration or special direction of attention would be suddenly replaced by one due to lack of attention.

Transactions of the Rochdale Literary and Scientific Society. Vol. v., 1896-97. Pp. 90 + xxii. (Rochdale: James Clegg, 1897.)

BY publishing the papers in this volume the Council of the Rochdale Literary and Scientific Society brings the work of the Society into prominence, and assists in making the objects of the meetings known to a wider circle. The volume is as interesting as its predecessors, and is a creditable addition to local literature and science. Among the papers contained in the volume is a chatty account of "Men and Manners in Manila," by Dr. A. Jefferson, an elementary description (with figures) of "Egyptian hieroglyphics, picture-writing, and the English alphabet," by Mr. C. Heape, a brief note on some graphite and flint implements found in a neolithic store near Rough Hill, by Mr. W. H. Sutcliffe, and a paper on the geological history of the Cephalopoda, by Mr. Charles Wardingley.

We see from the report that a number of other papers, not included in the present volume, were read before the Society during the nineteenth session, and several very instructive lectures were delivered. The Society, appears, indeed, to be a centre of light and leading in Rochdale.

Les Constantes Physico-Chimiques. By D. Sidersky. Pp. 207. (Paris: Gauthier-Villars et Fils. Masson and Co.)

M. SIDERSKY has already contributed a volume on polarisation and saccharimetry to the *Aide-Mémoire* series in which the present book appears. The constants herein described are dealt with in a similar manner; they